IN THE CLAIMS:

1. (Currently Amended) A method for sharing execution capacity among tasks executing in a real-time computing system having a performance specification in accordance with Rate Monotonic Analysis (RMA), comprising the steps of:

B1

pairing a higher priority task with a lower priority task;

reallocating execution time from the lower priority task to the higher priority task during an overload condition; ~~and~~

increasing the period of the lower priority task to compensate for said reallocated execution time; and

limiting an amount of execution time, Nr, to borrow from said lower priority task, $task_r$, to a maximum loan amount where Nr<<Cr, where

C_r = worst-case task execution time of $task_r$, and

N_r = amount of execution time to borrow from $task_r$.

2. (Previously Presented) The method of claim 1, wherein an amount of said execution time available to loan from said lower priority task (hereinafter $task_r$) to said higher priority task (hereinafter $task_u$,) is obtained as follows:

$$Nu = \frac{Nr \cdot Tu}{Tr}$$

where,

N_r = amount of execution time to borrow from $task_r$, where $N_r < C_r$,

T_r = period of $task_r$,

C_r = worst-case task execution time of $task_r$, and

T_U = period of $task_U$.

3. (Original) The method of claim 1, wherein said increased period of the lower priority task, $task_r$, is obtained as follows:

$$Tn = \frac{Cr \cdot Tr}{Cr - Nr}$$

where

C_r = worst-case task execution time of $task_r$,

T_r = period of $task_r$, and

N_r = amount of execution time to borrow from $task_r$, where $N_r < C_r$.

4. (Cancelled)

5. (Currently Amended) The method of claim 1[[4]], wherein a maximum execution time, Nm, that may be borrowed from said lower priority task, $task_r$, is obtained as follows:

$$Nm = Cr\left(1 - \frac{1}{m}\right)$$

where m is the multiple of the period of said lower priority task, $task_r$.

6. (Original) The method of claim 1, wherein said higher priority task has hard deadlines.

7. (Original) The method of claim 1, wherein said lower priority task has soft deadlines.

7
~~8.~~ (Currently Amended) A method for allocating resources among tasks executing in a real-time computing system having a performance specification in accordance with Rate Monotonic Analysis (RMA), comprising the steps of:

pairing a higher priority task with a lower priority task;

providing a first resource allocation to said lower priority task during a normal operating condition; ~~and~~

B1

reallocating a portion of said first resource allocation from said lower priority task to said higher priority task when said higher priority task is operable; and

limiting an amount of execution time, Nr, to reallocate from said lower priority task, $task_r$, to a maximum loan amount where Nr<<Cr, where

C_r = worst-case task execution time of $task_r$, and

N_r = amount of execution time to borrow from $task_r$.

8 7
~~9.~~ (Previously Presented) The method of claim ~~8~~, wherein said reallocated portion of said first resource allocation is obtained as follows:

T0170

$$Nu = \frac{Nr \cdot Tu}{Tr}$$

where,

N_r = amount of execution time to borrow from $task_r$, where $N_r < C_r$,

T_r = period of the lower priority task ($task_r$),

C_r = worst-case task execution time of $task_r$, and

T_u = period of the higher priority task ($task_u$).

9 7
~~10.~~ (Original) The method of claim ~~8~~, further comprising the step of increasing a

period of said lower priority task, $task_r$, as follows:

$$Tn = \frac{Cr \cdot Tr}{Cr - Nr}$$

where

C_r = worst-case task execution time of $task_r$,

T_r = period of $task_r$, and

N_r = amount of execution time to borrow from $task_r$, where $N_r < C_r$.

11. (Cancelled)

12. (Currently Amended) The method of claim ~~8~~ 11, wherein a maximum execution time, Nm, that may be borrowed from said lower priority task, $task_r$, is obtained as follows:

$$Nm = Cr\left(1 - \frac{1}{m}\right)$$

where m is the multiple of the period of said lower priority task, $task_r$.

13. (Original) The method of claim ~~8~~, wherein said higher priority task has hard deadlines.

14. (Original) The method of claim ~~8~~, wherein said lower priority task has soft deadlines.

13 ~~15.~~ (Currently Amended) A method for sharing execution capacity among tasks executing in a real-time computing system having a performance specification in accordance with Rate Monotonic Analysis (RMA), comprising the steps of:

pairing a higher priority task, $task_u$, with a lower priority task, $task_r$;

reallocating execution time from the lower priority task to the higher priority task during an overload condition; ~~and~~

increasing the utilization of said higher priority task; and

decreasing the utilization of said lower priority task in a proportional manner to maintain a constant utilization, U; and

B1 limiting an amount of execution time, Nr, to borrow from said lower priority task, $task_r$, to a maximum loan amount where Nr<<Cr, where

C_r = worst-case task execution time of $task_r$, and

N_r = amount of execution time to borrow from $task_r$.

14 ~~16.~~ (Original) The method of claim 13 ~~15~~, wherein said utilizations of said tasks are varied as follows:

TD 190

$$\frac{Cu}{Tu} + \frac{Cr}{Tr} = U$$

where,

C_u = worst-case task execution time of $task_u$,

T_u = period of $task_u$,

C_r = worst-case task execution time of $task_r$,

T_r = period of $task_r$, and

U = utilization for both tasks.

17. (Previously Presented) The method of claim 15, wherein an amount of said execution time available to reallocate from said lower priority task (hereinafter $task_r$) to said higher priority task (hereinafter $task_u$) is obtained as follows:

$$Nu = \frac{Nr \cdot Tu}{Tr}$$

where,

N_r = amount of execution time to borrow from $task_r$, where $N_r < C_r$,

T_r = period of $task_r$,

C_r = worst-case task execution time of $task_r$, and

T_U = period of $task_U$.

18. (Original) The method of claim 15, further comprising the step of increasing a period of the lower priority task, $task_r$, as follows:

$$Tn = \frac{Cr \cdot Tr}{Cr - Nr}$$

where

C_r = worst-case task execution time of $task_r$,

T_r = period of $task_r$, and

N_r = amount of execution time to borrow from $task_r$, where $N_r < C_r$.

19. (Cancelled)

20. (Currently Amended) The method of claim 1519, wherein a maximum execution time, Nm, that may be borrowed from said lower priority task, $task_r$, is obtained as follows:

$$Nm = Cr\left(1 - \frac{1}{m}\right)$$

where m is the multiple of the period of said lower priority task, task$_r$.

21. (Original) The method of claim 15, wherein said higher priority task has hard deadlines.

22. (Original) The method of claim 15, wherein said lower priority task has soft deadlines.

23. (Cancelled)

24. (Cancelled)

25. (Cancelled)